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Current U.S. Class:

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Field of search:

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**References Cited [Referenced by]**  
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5796374	Aug 1998	Cone ET AL
5546099	Aug 1996	Quint ET AL
5089914	Feb 1992	Prescott
5003300	March 1991	Wells
6236969	May 2001	Ruppert ET AL
5191602	Mar 1993	Regen ET AL
4882745	Nov 1977	Silver
4051534	Sept 1977	Dukich ET AL

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**CLAIMS**

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What is claimed is:

1. A head covering apparatus (consisting of a cap for engaging the head of the wearer) for receiving and transmitting electronic signals consisting of a cap for engaging the head of a wearer, the cap which comprises:

a cap portion formed of a material having a first stiffness characteristic such that the cap portion is adapted to conform(s) flexibly to the head of the wearer;

a brim(/visor) projecting from said cap portion, the brim(/visor) having a second stiffness characteristic which is greater than the first stiffness characteristic of the cap portion, the brim(/visor) including;

a upwardly facing surface, and a downwardly facing surface

a solar cell which has receptacles for solar rays which is not blocked by the upwardly facing surface  
an antenna which extends beyond the upwardly facing surface  
an electronic module which is attached to the adjacent portion of the brim and which is in electrical communication with the solar cell for receiving power from the solar cell and which is in electrical contact with the antenna for the purpose of passing a signal between the electronic module and the antenna.

The electronic module further including a transmitting component in electrical communications with the antenna

The electronic module further including a receiving component in electrical communications with the antenna

The electronic module further including amplifiers, modems, and switching components necessary for one or two way communicating

The electronics module further including a visual display component for providing the wearer with menu options, digital and graphic data

The electronics module further containing a built-in and boom microphone for receiving and processing audible signals from the wearer and which is in electrical communications with the transmitter component

The electronics module further contains built in speakers and earphones which are in electrical communications with the receiving component

The electronic module contains a voice activated component wherein the wearer can make menu and control selections via audible commands

The electronic module wherein input/output jacks are available for uploading/downloading digital data

2. (the apparatus according to claim 1, wherein the electronics module is fitted with at least one and more likely integrated combinations of the electronics components of popular consumer communications/entertainment products selected from the following set of consumer devices; cell phones, beepers, personal communications devices, GPS receivers, FM radio receivers, MP3 recorders/players, voice recorders, organizers, limited internet reception, digital photography, and limited digital video recording). The head covering apparatus according to claim 1 wherein the electronic module is attached to the adjacent portion of the visor

3. the (head covering) apparatus according to claim 2, wherein the electronics module includes a transmitting component in electrical communications (has both a manual control and voice activated control for initiating operation and selecting functions via manual and voice operated scrolling of menu's appearing on a drop down display) with the antenna

The electronic module further including a receiving component in electrical communications with the antenna

The electronic module further including at least one amplifier, modem, and switching component necessary for one or two way communicating

The electronic module further capable of capturing, processing, storing and managing digital data

The electronics module further including a visual display component for providing the wearer with menu options, digital and graphic data

The electronics module further containing a rechargeable battery

The electronics module further containing a built-in microphone for receiving and processing audible signals from the wearer and which is in electrical communications with the transmitter component

The electronics module further containing a boom microphone for receiving and processing audible signals from the wearer and which is in electrical communications with the transmitter component

The electronics module further containing built in speakers which are in electrical communications with the receiving component

The electronics module further containing earphones which are in electrical communications with the receiving component

The electronic module contains a voice activated component wherein the wearer can make operational selections via audible commands

The electronic module wherein input jacks are available for uploading digital data.

The electronic module wherein output jacks are available for downloading digital data.

4. the apparatus according to claim 1, wherein the electronics module is (shaped and molded to conform to the contours of the underside of the cap brim. Said electronics module is physically tapered at the forward edge and both sides, and expands to a width of approximately .5 inch where the cap rim approaches the wearer's forehead) fitted with the functional electronics components of popular consumer products selected from the group consisting of; cell phones, beepers, personal communications devices, GPS receivers, FM radio receivers, MP3 recorders/players, voice recorders, organizers, limited internet reception, digital camera, broadcast TV reception, hand held computers and limited digital video recording.

5. the apparatus according to claim 1, wherein the electronics module (has two active pins protruding from its upper surface, wherein each pin extends through and engages the cap rim and engages the solar cell and antenna on the upper surface of the cap brim, securing the electronics module to the cap brim, and second, providing antenna and solar cell interconnections to the electronics module) is fitted with integrated combinations of electronics components of popular consumer communications and entertainment products selected from the group consisting of; cell phones, beepers, personal communications devices, GPS receivers, FM radio receivers, MP3 recorders/players, voice recorders, organizers, limited internet reception, digital camera, broadcast TV reception, hand held computers and limited digital video recording.

6. the apparatus according to claim 2, wherein the electronics module contains combinations of operator interface devices such as a drop down information display having a menu and wherein the electronics module has both a manual and a voice activated control means for initiating operation and selecting functions via manual and voice operated scrolling in response to appearing on drop down display (Stereo speakers, manual push button controls with associated led indicators, built in microphone, drop down microphone boom, earphone jacks, input/output jacks, digital camera lens, and a rechargeable battery).

7. the apparatus according to claim 1, wherein the (flexible solar cell is rated to support the electronics functions mounted in the electronics module, said solar cell being designed to follow the contours of the upper surface of the baseball cap rim) electronics module has a shaped contour which conforms to the contour of the underside of the visor, said electronics module is physically tapered at the forward edge and both sides, and expands to a width of approximately .5 inch adjacent to the cap portion which is adapted to engage the wearer's forehead.

8. (the solar cell apparatus according to claim 7 is designed with two receptacles for the two pins protruding from the upper surface of the electronic module) the apparatus according to claim 1, wherein the electronics module has two active pins protruding from its upper surface, wherein each pin extends through and engages the visor and engages the solar cell and antenna on the upper surface of the cap visor for securing the electronics module to the cap visor, and for providing antenna and solar cell interconnections to the electronics module.

9. (the receptacles according to claim 8 serve to accept the two pins on the upper surface of the electronic module and therefore secure all components of the apparatus to the cap

brim, wherein the left side receptacle is insulated from the solar cell and provides connectivity for the RF antenna which when seated on the left side pin also provides a captivating function for the left side of the electronics module, wherein, the right side pin provides the electrical connectivity between the solar cell and the electronics module and secures the right side of the electronics module to the baseball cap rim by having an electrical wire nut applied to its top) The apparatus according to claim 2, wherein the electronics module contains combinations of operator interface devices selected from the group consisting of a drop down information display, stereo speakers, manual push button controls with associated led indicators, audio controls, built-in microphone, drop down microphone boom, earphone jacks, input/output jacks, digital camera lens, and a rechargeable battery.

9a. the apparatus according to claim 1, wherein the flexible solar cell is rated to support the electronics functions mounted in the electronics module, said solar cell being designed to follow the contours of the upper surface of the baseball cap rim  
the solar cell apparatus is designed with two receptacles for the two pins protruding from the upper surface of the electronic module

the receptacles serve to accept the two pins on the upper surface of the electronic module and therefore secure all components of the apparatus to the cap brim, wherein the left side receptacle is insulated from the solar cell and provides connectivity for the RF antenna which when seated on the left side pin also provides a captivating function for the left side of the electronics module, wherein, the right side pin provides the electrical connectivity between the solar cell and the electronics module and secures the right side of the electronics module to the baseball cap rim by having an electrical wire nut applied to its top

10. the apparatus according to claim 1, wherein the antenna is selected to support the wireless electronic functions integrated in the electronics module.

11. the antenna according to claim 10, wherein the antenna is mounted on the left side electronics module pin as said pin pierces the cap brim and passes through the solar cell.

12. the antenna according to claim 10, wherein said antenna should have a telescoping capability and have a hinged and swivel base to operate in the vertical and stow in the horizontal position.

13. the apparatus according to claim 1, wherein the antenna also serves to anchor the left side of the electronic module to the head wearable cap/visor.

14. the apparatus according to claim 1, wherein the stereo earphones mate up to electrical jacks on both sides of the electronic module, (The earphones use the appropriately rated audio wires which run from the main body jacks, attach to the sides of the baseball cap via plastic clips and attach to the earphones which the user puts in one or

both ears as needed) said jacks provide connectivity for the earphones to the electrical module.

15. the apparatus according to claim 14, wherein the earphones have (velcro pads on their outer surface which in the stowed position attach to a pair of velcro tabs which are attached to the head wearable cap/visor above the users ears) means for attachment to the head wearable cap above the users ears when not in use or stowed.

16. the apparatus according to claim 1, wherein the electronic module has an internal battery, said battery (is) rated to be rechargeable by the solar cell and provide power to the electronic module during periods of little or no external light.

17. the battery according to claim 16, wherein the switch over from solar cell to battery power is automatic via sensors that detect reduction in solar energy or reduction in available light, said switching will also preclude overcharging of the battery.

18. the apparatus according to claim 1, wherein the electronic module drop down display is designed to be activated when the user moves it from its horizontal stowed position, to the vertical activated position, Said drop down display would present the operator with the same information typically presented on the displays of the hand held communications and entertainment devices available today.

19. the display according to claim 18, wherein the size, location on the electronic module and information presented depends on the functions available in the electronic module.

20. the apparatus according to claim (6) 1, wherein the I/O jacks are configured to industry standards for loading MP3 digital music for play back by the operator, said jacks should also be able to accommodate the down loading of digital photo's and video's data that can be stored by the electronic modules internal digital memory.

21. the electronics modules digital memory according to claim 20, wherein the internal memory is scaled to support the communications and entertainment control and processing functions as presented in the electronics module.

22. An apparatus according to claim (6) 3, wherein the built in microphone can pick up communications or control audio from the operator when privacy is not important, said built in microphone is disabled when the boom microphone is lowered from it's stowed position up against the head wearable cap/visor brim, to the lips of the operator, said boom microphone gives the operator some measure of privacy.

23. An apparatus according to claim (6) 3, wherein (the) a digital camera lens can be (lowered into the vertical operational position from the stowed horizontal position) mounted on the back of the digital display for the purpose of collecting digital data in the form of camera images. Said digital camera images captured by the camera lens are